

Appl. No. 10/787,097
Group Art Unit: 2611
Amdt. Dated June 8, 2007
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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (original) An efficiency optimizing apparatus for optimizing power efficiency in a transmitter, said efficiency optimizing apparatus comprising:

a transmit power generator operable to produce an indication of desired average transmitted power;

a signal converter operable to produce a first adjustment signal based, at least in part, on said indication of desired average transmitted power;

a processor operable to:

produce a second adjustment signal based, at least in part, on said indication of desired average transmitted power;

determine a difference between said first adjustment signal and said second adjustment signal; and

produce a correction value based on said difference; and

a summer operable to produce a parameter signal, based on said correction value and said first adjustment signal, to control an aspect of operation of said transmitter.

2. (original) The efficiency optimizing apparatus of claim 1 wherein said aspect of operation of said transmitter is an aspect of operation of a power amplifier of said transmitter.

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3. (original) The efficiency optimizing apparatus of claim 1 further comprising a gain controller operable to produce a gain control signal based on said indication of desired average transmitted power and where said signal converter is operable to produce said first adjustment signal based on said gain control signal.

4. (original) The efficiency optimizing apparatus of claim 3 wherein said signal converter is a scaling unit operable to scale said gain control signal to produce said first adjustment signal.

5. (original) The efficiency optimizing apparatus of claim 3 wherein said signal converter is a piecewise clipper operable to:

process said gain control signal according to a transfer function defined by at least one clipping parameter to produce said first adjustment signal;

where said transfer function includes at least one range of clipping values of said gain control signal for which said first adjustment signal is constant;

where said transfer function includes at least one range of scaling values of said gain control signal for which said first adjustment signal is a scaled version of said gain control; and

wherein said transfer function is a continuous function.

6. (original) The efficiency optimizing apparatus of claim 1 wherein said processor employs:

a mapping procedure to produce said second adjustment signal by determining an ideal adjustment signal corresponding, in a mapping table, to said indication of desired average transmitted power;

a subtracting procedure to determine said difference between said first adjustment signal and said ideal adjustment signal; and

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an accumulating procedure to add said difference to a previously existing value to produce said correction value.

7. (original) The efficiency optimizing apparatus of claim 6 further employing a clipping procedure to limit said difference such that said difference does not exceed a limit value.

8. (currently amended) The efficiency optimizing apparatus of claim 6 further comprising:

an initial value memory adapted to supply an initial value to said ~~accumulator~~
accumulating procedure; and

a digital to analog converter, having an output range, for converting said correction value to a correction signal.

9. (original) The efficiency optimizing apparatus of claim 8 wherein said initial value is a middle value in said output range of said digital to analog converter.

10. (original) The efficiency optimizing apparatus of claim 8 wherein said initial value is a mean value of said correction signal.

11. (original) The efficiency optimizing apparatus of claim 10 where said mean value is determined through measuring and averaging said correction signal over a number of similar efficiency optimizing apparatus.

12. (original) The efficiency optimizing apparatus of claim 10 where said mean value is determined through measuring said correction signal over a previous period of transmission.

13. (original) The efficiency optimizing apparatus of claim 1 further comprising:

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a mapper operable to receive a data indicator and, based on said data indicator, produce a value representative of a peak power to average power ratio; and

a summer operable to produce a sum of said value and said indication of desired average transmitted power;

wherein said processor is operable to produce said second adjustment signal based on said sum.

14. (original) The efficiency optimizing apparatus of claim 1 wherein said signal converter is a hard wired device.

15. (original) A method of optimizing power efficiency in a transmitter, said method comprising:

generating an indication of desired average transmitted power;

based on said indication of desired average transmitted power, producing a first adjustment signal;

based on said indication of desired average transmitted power, producing a second adjustment value;

determining a difference between a first adjustment value based on said first adjustment signal and said second adjustment value;

based on said difference, producing a correction value; and

based on said correction value and said first adjustment signal, producing a parameter signal to control an aspect of operation of said transmitter.

16. (original) The method of claim 15 wherein said aspect of operation of said transmitter is an aspect of operation of a power amplifier of said transmitter.

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17. (original) The method of claim 15 wherein said transmitter includes a gain controlled amplifier and said method further comprises:

based on said indication of desired average transmitted power, producing a gain control signal for said gain controlled amplifier; and

based on said gain control signal, producing said first adjustment signal.

18. (original) The method of claim 15 further comprising producing said second adjustment value by determining an ideal adjustment value corresponding, in a mapping table, to said indication of desired average transmitted power.

19. (original) The method of claim 15 wherein said producing said second adjustment value further comprises:

producing an indication of desired peak transmitted power by summing said indication of desired average transmitted power with an indication of peak to average power ratio; and

based on said indication of desired peak transmitted power, producing said second adjustment value.

20. (original) The method of claim 20 further comprising:

converting said correction value to a correction signal; and

based on said correction signal and said first adjustment signal, producing said parameter signal to control said aspect of operation of said transmitter.